REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
12/07/2017	Poster	

4. TITLE AND SUBTITLE
Spotlight on GME/GHSE-Supported Research

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
Gibbons, Thomas

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
59th Clinical Research Division
1100 Willford Hall Loop, Bldg 4430
JBSA-Lackland, TX 78236-9908
210-292-7141

8. PERFORMING ORGANIZATION REPORT NUMBER
17499

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
59th Clinical Research Division
1100 Willford Hall Loop, Bldg 4430
JBSA-Lackland, TX 78236-9908
210-292-7141

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release. Distribution is unlimited.

13. SUPPLEMENTARY NOTES
AFMS Science and Technology (S&T) Projects (Senior leadership Workshop 2017) 7 Dec 2017

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Clarice Longoria
					19b. TELEPHONE NUMBER *(Include area code)* 210-292-7141

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59th Medical Wing Clinical Research Division

CLINICAL INVESTIGATIONS PROGRAM

SPOTLIGHT ON GME/GHSE-SUPPORTED RESEARCH

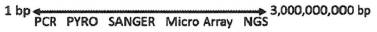
An example of a "Parent" 59 MDW/ST R&D Project; representative of synergy between Clinical Investigations and R&D programs:
"Adverse childhood experience and serotonin transporters: a gene environmental interaction study of the risk of PTSD in soldiers (ACES)"

CRD Support:

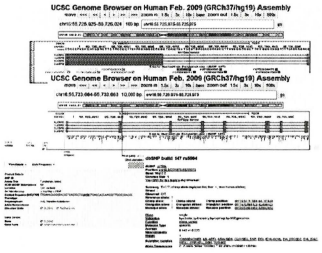
Project 1 GME investigators requested lab support to assess for SNPs in select genes. After consulting with ST CRD Lab Scientists, Investigators decide to utilize PCR and whole exome NGS for their Protocol.

Project 2 GME investigators requested lab support to assess the methylation status of genes. After consulting with ST CRD Lab Scientists, Investigators decide to utilize Pyrosequencing for their Protocol.

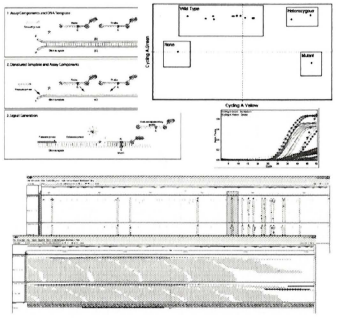
Genetic Status of Genes via PCR & NGS



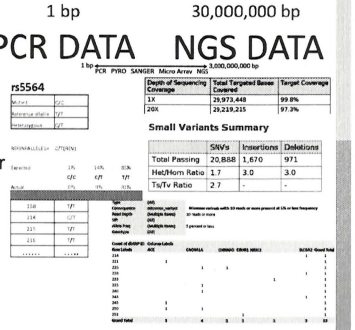
A. Development:
- Selecting Relevant SNPs
- Selecting NGS approach
- Selecting/Designing of Primers
- Verification of Assays



B. Performance:
- Collect & Extract DNA from Sample (CAMD)
- PCR for SNP
- Construct Exome library for NGS
- Sequence Exome via NGS
- Store Exome data for future studies

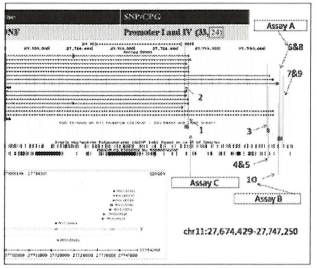


C. Dissemination:
- Analyze/Interpret Data
- Provide Data in Excel Format
- Provide Materials & Methods for Publication of Research

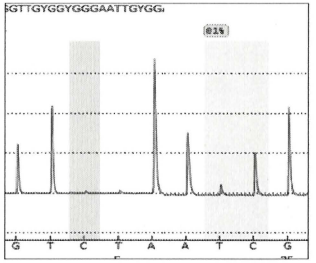


Epigenetic Status of Genes via Pyrosequencing

A. Development:
- Selecting regions of Genome
- Selecting/Designing of Primers
- Verification of Assays



B. Performance:
- Collect & Extract DNA from Sample (CAMD)
- Bisulfite Conversion of DNA
- PCR Converted DNA
- Pyrosequence



C. Dissemination:
- Analyze/Interpret Data
- Provide Data in Excel Format
- Provide Materials & Methods for Publication of Research

Sample ID	Well	Assay	ID	Internal Control (T)	Internal Control (C)	%Bisulfite conversion of control
Low Cont	A5	BDNF_08	L	150.12	6.32	4%
	A5	BDNF_10	L	152.94	9.38	5%
	A1	NR3C1_01	L	363.37	7.38	2%
	B5	NR3C1_05	L	220.15	3.55	3%
	C5	NR3C1_05	L	218.72	4.11	4%
High Cont	A6	BDNF_08	H	183.44	6.38	3%
	A6	BDNF_10	H	138.57	11.60	8%
	A2	NR3C1_01	H	425.66	9.96	2%
	B6	NR3C1_05	H	219.40	5.29	3%
	C6	NR3C1_05	H	140.83	3.36	2%
	A7	BDNF_08	11	230.08	6.08	3%
	A7	BDNF_10	11	203.04	6.03	3%

The views expressed are those of the authors and do not reflect the official views or policy of the Department of Defense or its Components.

SNP = Single Nucleotide Polymorphism NGS = Next Generation Sequencing PCR = Polymerase Chain Reaction CAMD = Center for Advanced Molecular Detection

Thomas F. Gibbons, Ph.d., Laboratory Branch Chief, 59th Medical Wing/ST Clinical Research Division